Will the Bologna Declaration Bring Babies?
The Effects of a University Reform on Fertility and Educational Attainment Patterns

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This study explores the effect of a university reform in Italy on population structure and fertility dynamics by educational level. Italy represents an interesting case study as it is one of the first European countries to implement the "Bologna declaration", an agreement aiming at standardizing education systems across the European countries (Bologna declaration, 1999). The reform leads to a lower age at graduation, as it compresses the duration of common university degrees, and this may increase fertility. However, the shortening of education has also lead to an increase in the probability of attaining university degrees, which could depress childbearing patterns. The education reform can therefore have contrasting effects on the timing and outcome of childbearing.

a) The reform, has lead to a more rigid university system, where there are few opportunities to remain in the educational system for long durations (Dornbusch et al. 2000). Moreover, the duration required it takes to complete university degrees has been shortened. The effect of these reforms is that there is likely to be a decrease in the outcome of fertility.

b) The reform could increase educational attainment, as shown by the sudden increase in tertiary enrolment after the reform was introduced. The percentage of first year university enrolments over secondary school graduations jumped from 65.1% in 2000 to 73.3% in 2001, when the reform was introduced (Miur, 2003). In this case, it might affect the population composition by educational attainment with possible consequences on fertility.

We evaluate the possible effect of the university reform on fertility by decomposing changes in fertility (i.e. the Total Fertility Rate) into two components: one due to changes in age-education-specific fertility rates, and one due to compositional changes by education of women within each age group.

On the one hand, the lower graduation age could lead to earlier childbearing and a higher fertility outcome. A younger graduation age has in several studies been shown to lead to earlier fertility timing and other demographic events (Billari et al., 1999; Skirbekk et al. 2003), and has also typically been associated with a lower fertility outcome (Kohler et al. 2001). The possible demographic impacts of earlier fertility timing due to educational reforms were investigated also by

Lutz and Skirbekk (2004), although their estimates did not take into account that school reforms can affect the educational attainment patterns and they only consider primary and secondary education.

On the other hand, as the reform could increase educational attainment, the increase in the proportion of women with higher education could have a depressing effect on fertility. It is well-known that women with more education tend to have fewer children (Lutz and Goujon 2001).

We investigate the impact of the university reform by providing population projections by age, gender and education from 2000 to 2050 in Italy. The assumptions on the transition to university attainment are based on recent evidence on increasing rates of university enrolment and completion. The assumptions on fertility are formulated by taking into account the aforementioned possible effects of the reform and by decomposing the changes in the two components. We use data provided by the Italian National Statistical Institute (ISTAT) and the Italian Ministry for Education, University and Research (MIUR).

The Bologna Declaration will be implemented in several European countries. It is therefore important to develop a clear understanding of how this reform to the education system will affect both education attainment and fertility patterns. Many demographers attribute the current lowest-low fertility regime in southern and central European countries to a late timing of events that take place prior to childbirth (Billari et al. 2000) and it is therefore important to understand whether and to which extent policy changes can affect the timing of such events. Italy is indeed one of the countries with "lowest-low" fertility, and there is a growing interest in what could be done to counter the long-run impact of the low fertility (See Kohler et al. 2002). Moreover, whether the Bologna-declaration can decrease the need for women to make a decision between either education or fertility is also of interest. Women's fertility preference tend to be independent of education, but education (and the length of it) can have a depressing effect on fertility (OECD 2003).

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